



The knowledge base for spatial policy

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Spatial policy needs to be informed and legitimized by sound knowledge concerning spatial development trends, upcoming challenges, potential instruments and their impact. Expertise is of particular relevance for spatial planning in comparison with other policy fields because it lacks of competencies for the implementation of its goals and therefore relies on persuasion and good arguments – in other words knowledge - to influence sectorial policies (Sinz 2011: 471). In this contribution's context, sound knowledge means knowledge having epistemic authority, not only validated by academia, but also by political actors and society as the most reliable or the best available knowledge concerning the question at hand. Despite a crisis of expertise in terms of loss of credibility (Maasen/Weingart 2005), the demand for expert advice is growing in an ever more complex world with increasing uncertainty. A continued growth of expert reports, policy relevant research and procedures of political advisory can be observed (Lendi 2005) as well as a pluralization of private as well as publicly financed knowledge infrastructures (Weingart/Lentsch 2008:12). This contribution focusses on the actors that are generating or brokering policy relevant knowledge in spatial planning and their changing role in different European countries. Several organizational forms of knowledge infrastructures have developed to fulfil different functions and bridge the gap between theory and practice, academic research and political decision making.

The comparison of national knowledge infrastructures takes place here against the background of two contradictory mega-trends. The first trend displays the dominance of science as a mode of knowledge production and production of truth. Science is deeply entrenched into our life worlds and marginalizes all other knowledge forms (i.e. lay knowledge). As a consequence a „scientization of politics“ can be observed, meaning the dominance of scientific validity claims and rational decision making legitimated by scientific research. In the field of spatial planning, this trend is reflected in the debate about evidenced-based planning (e.g. Davoudi 2006). Though being at the same time a scientific discipline and a policy field, planning is very action-oriented and uses model projects in specific regions, cities or quarters as laboratory. Non-scientific forms of knowledge e.g. of local actors are therefore more acknowledged than in other disciplines.

The other trend is the “politicisation of science”, meaning the blurring of boundaries between science, politics and even civil society. This refers to an instrumental use of expertise as well as to an open dialogue about research priorities, relevance and usefulness of scientific research depending on the cultural context. This trend might result in a loss of autonomy of science e.g. concerning the decision about research priorities.

As a result the boundaries between science and politics become blurred and it is questionable if the two worlds thesis is still valid (science and politics as separated spheres). It is also less clear whether science dominates politics (“expert on top”) or politics dominate science (“expert on tap”). The reconstruction of this boundary and thus the respective autonomy vis-à-vis each other is never the less desirable for both sides to enhance the authority of science (by separating ‘neutral’ evidence that cannot be questioned by non-scientists from negotiable values) as well as the legitimacy of democratic decisions (not predetermined, but in the sole responsibility of the elected politicians) (Jasanoff 1990: 230f; Miller 201: 493f; Pregernig 2005: 285). According to Gieryn (1983) and Halffman/Hoppe (2005), there is a constant boundary work taking place, defining what is regarded as scientific and thus trustworthy as well as negotiating the relation and division of labour between experts and policy makers. The system of knowledge generation and integration is in flux due to of constant negotiation processes concerning the division of power and roles between science and politics as well as the emergence of new actors.

Analyzing the organizational form of policy advisors

The landscape of knowledge infrastructures shall be discussed for the cases of Germany, the Netherlands, and Switzerland, addressing the following questions:

Which actors are generating or brokering policy relevant knowledge in spatial planning? Which negotiations are taking place at the boundary of science and politics? How do global trends such as the scientization of politics and the politization of science influence the constellation of knowledge infrastructures in different European countries?

The choice of the case study countries follows a most-similar cases-design, comparing countries with as much similarities as possible in order to be able to analyze the dynamics of change. The direct democracy in Switzerland has an impact on political advisory in terms of implicitly addressing the people and the concerns of the citizens because of a potential referendum (Lendi 2012). The cases are never the less similar concerning the planning system belonging to the comprehensive integrated tradition (Nadin/Stead 2013) as well as to the corporatist policy style (Renn 1995; Straßheim 2008: 287).

The analysis of knowledge infrastructures focus on three dimensions, operationalized into four criteria each:

- Securing of the policy-relevance and connection to the ministry/ politics
- Securing of the scientific quality and connection to the academic community
- Public accessibility of expertise

The contribution compares original empirical results from expert interviews and document analysis in the German case with insights from policy advice in the Netherlands and Switzerland based on existing empirical work and desktop research. 13 Guided interviews with representatives of the knowledge infrastructures, scientific advisory boards and national ministries have been carried out, thereof 8 Federal Institute for Research on Building, Urban Affairs and Spatial Development BBSR, 3 Scientific advisory board of BBSR, 3 National ministries, 1 Advisory council Beirat für Raumentwicklung, 3 University, 1 Deutscher Städtetag. Several interviewees have a double role. The document analysis covers research programs and annual reports, strategy papers, evaluation reports, interviews, speeches and publications concerning the positioning of the institution, press and coalition contracts.

Pluralization of knowledge infrastructures

Policy advice is in present times first and foremost provided by organizations in institutionalized form (Patzwaldt 2008: 19), which is why organizational forms as well as advisory relations between organizations are primarily addressed here. When looking at the interrelation of knowledge infrastructures, it never the less has to be kept in mind that many experts have a double role, being part of different organizations at once (e.g. university professors with own consultancy office or involvement in a think tank or being member of an expert committee) or successively because of

changes in their professional biography and add through their personal network and informal contacts to a desirable thickness of interactions between the knowledge infrastructures.

There is a broad landscape of actors providing policy advice, which has become even more pluralistic in the last decades (Hustedt et al. 2013: 18; Althaus 2011: 248; Straßheim 2013: 71). “The birth of “new” actors not automatically implies the death of “old” actors“(Jochem/ Vatter 2006: 143), the situation can rather be described as a cohabitation of institutions with complementary and sometimes competing roles as well as different functions from policy monitoring to risk assessment and the provision of short term advice for decision making, background data of development trends or a foresight of upcoming challenges (Weingart/ Lentsch 2008: 54). Whereas a close contact to the political sphere is favorable in order to identify the burning questions and make feasible propositions, other roles like opening up new, unconsidered perspectives or a critical reflection demand more distance and independency of thought. Political advisory therefore has instead of one ideal form many appropriate organizational forms depending on the function to fulfil.

The existing organizational forms can be differentiated into research units as part of an administration, expert committees (Scientific advisory boards, ad-hoc commissions), public research institutions (Universities, non-university research institutes as well as scientific academies), think tanks (foundations, associations, research institutes of Interest groups) and profit-oriented providers (Private consultants, engineering and law offices). These forms of knowledge infrastructures can be demarcated concerning their institutionalization of advisory relations (permanent/ project related) and their financing (private/ public).

These organizational forms exist in all political styles, but which type of organizational form is influential depends according to the policy style and the policy field. Renn (1995) differentiates four styles of using expertise, depending on the selection rules of relevant knowledge, the processing rules, the influence of scientific evidence on decision making and the relevance for legitimizing policy decisions. It should be added that these policy styles are neither static nor completely homogenous. Halfmann and Hoppe (2005) even use the concept of policy styles to describe different science/policy arrangements existing in parallel within one state.

The corporatist model, to which the three countries scrutinized here belong, attributes a particular role to official expertise accepted by all parties as common ground for political negotiations. It is characterized by the fact that stakeholders of different social groups are included at an early stage to balance their interests. The role of scientific experts is to identify trends, impacts and policy options as framework for political negotiations. They are not only expected to provide facts and figures, but a professionally founded opinion. The significance of their expertise derives primarily from the reputation of experts in their field, not so much from a formal proof. Scientific experts are supposed to deliver independent and balanced advice as guarantor for their trustworthiness, whereas an open instrumental use to defend specific interests or a polarization is rather disapproved unlike in the adversarial policy style of the US (Speth 2006, 66).

Table 1 gives an overview of the most important organizations providing policy advice in the field of spatial planning in the Netherlands, Switzerland and Germany. This list should not be understood as being exclusive and could surely be extended especially when it comes to the profit-oriented providers and Think Tanks, as many touch space relevant issues.

Organisational form	Germany	Switzerland	The Netherlands
Research unit as part of an administration	BBSR Bundesinstitut für Bau-, Stadt- und Raumforschung	ARE Bundesamt für Raumentwicklung	PBL Planbureau voor de Leefomgeving
Expert committees	Beirat für Raumentwicklung	Rat für Raumordnung	RLI Raad voor de Leefomgeving en infrastructuur
Academic research institutions	various faculties dealing with planning and other adjacent disciplines like geography, sociology, law etc.	e.g. ETH Zürich and EPFL École Polytechnique Fédérale de Lausanne	Various universities e.g. Groningen, Delft, Nijmegen, Amsterdam
	4 spatial research institutes (IÖR, IRS, ILS, IfL) ARL Akademie für Raumforschung und Landesplanung		TNO Netherlands Organisation for Applied Scientific Research
Think Tanks	vhw Bundesverband für Wohnen und Stadtentwicklung e.v.; Deutscher Verband für Wohnungswesen, Städtebau und Raumordnung e.V.	VLP-ASPAN Schweizerische Vereinigung für Landesplanung; SIA Schweizer Ingenieur und Architektenverein	Knowledge Centres, e.g. platform 31, Kennisplatform Crow; BNSP Beroepsvereniging van Nederlandse Stedebouwkundigen en Planologen
	Schader-Stiftung; Bertelsmann-Stiftung; Montag-Stiftung; Wüstenrot Stiftung	Avenir suisse	
Profit-oriented providers	e.g. Prognos, Empirica, many small ones	e.g. Metron AG	

Table 1 Knowledge Infrastructures in the field of spatial planning

A pluralization of knowledge infrastructures is taking place in all three countries, but the new actors are complementing instead of replacing the old ones and opening up new choices to the customers of political advisory.

Especially think tanks and profit-oriented providers have increased and gained of importance. Due to new technical possibilities and the utilization of consumer data, private consultants offer additional data bases and reports that are also usable for research on spatial developments (e.g. in Germany the Sinus milieu studies or rent price statistics based on online advertisements issued by Empirica). According to Jochem and Vatter (2006) think tanks are flourishing and gaining more influence even in countries with a corporatist policy model like Germany, Switzerland and the Netherlands, although the framework conditions are different compared to countries with an adversarial political style like the US. The term think tank is quite broad and refers here to “application-oriented research institutes, whose main function it is to provide scientifically founded, often inter-disciplinary analyses and comments on a broad field of relevant political issues” (Jochem/ Vatter 2006: 143). They can be both privately and publicly financed and be interest oriented or more academic.

A characteristic of political advisory in Switzerland is the fact that academic and non-academic organizations are less separated (Jochem/ Vatter 2006). Think tanks often have close relations to the administration and many university professors are engaged in private research institutes or consultancies. An indication for the high reputation of some think tanks is the fact that members of the Think Tank Avenir Suisse have been appointed to the scientific advisory council Rat für Raumordnung, which is advising the Parliament and administration concerning issues of spatial development. Germany seems to be more relying on official and academic knowledge, being reluctant towards advocatory knowledge production and the open manifestation of interest based positions in policy advice. The number of think tanks is also increasing but they tend to be rather academic (Speth 2006: 6). As part of think tanks generating expertise on issues of spatial development, private foundations (e.g. Schader, Bertelsmann, Montag), and associations (e.g. vhw Bundesverband für Wohnen und Stadtentwicklung e.V.) have to be named. In the Netherlands, the term “Knowledge Centre” has been en vogue since 1998, designating a form of knowledge infrastructure focusing on application-oriented research and making expertise more available for policy use via transfer and communication strategies. Knowledge Centres are largely publicly funded, interdisciplinary and organized around a policy field or specific policy issue like sustainable building, infrastructure or urban policy (e.g. platform 31, Kennisplatform Crow). Over 100 organizations of this kind have been founded,

though the term is very broadly used ranging from a Website as communication platform to a whole university (Wageningen) (Halffman/Hoppe 2005: 144). The financing is often temporal on a project base, meaning that this system is very much in flux. This ephemerality of constellations is a disadvantage, since knowledge infrastructures need time to gain a certain reputation and political processes can be long.

A privatization of public research institutions or replacement by privately financed knowledge infrastructures cannot be observed in any of the three countries. But Halffman/ Hoppe (2005: 140ff) discuss the externalisation and contractualisation of expert knowledge as part of neo-liberal patterns of public expertise in the Netherlands. This means that the knowledge generation is outsourced from the ministries and their internal research institutions to consultancies and other research organizations, e.g. universities or knowledge brokers with an increased distance to politicians. As a consequence complex and increasingly formalized negotiations over commissioned research projects and programmes have to be managed and lead to hidden transaction costs. Whether the share of contracted research differs between the countries or increases remains to be investigated. A tendency towards a growing externalization seems to exist in the Netherlands. In Germany, the commissioning of extramural research is since a long time common practice in the BBSR and much higher than in other departmental research agencies (Pahl-Weber 2011: 404). This choice is made in the Ministry via the attribution of resources for specific tasks, not allowing the institute to convert research funds into own staff resources. Most of the commissioned research is highly pre-structured. More open policy relevant research programs dealing with issues of spatial development have been launched by the federal ministry of research BMBF e.g. on sustainable development and land consumption (FONA, REFINA 2006-2012) or future Megacities (2008-2014). The disadvantage in comparison with research launched by the sector ministries is that the projects are managed by a project management organization that does not itself work with the content of projects and that the results are not directly addressed at the sectoral administration. This kind of research therefore adds to the available knowledge pool concerning spatial issues, but is not direct policy advice between an advisor and its addressee. As politicians do not tend to read huge numbers of project reports, the knowledge first needs to be filtered by an intermediary actor facilitating the integration of research results into political processes.

In the Swiss administration (Bundesämter) it is common to commission research as well instead of building up internal research capacities (Barlösius 2008: 11). A general tendency in Switzerland has been to shift from individual consultancy to larger research programs with policy relevance, meaning that the time restrictions are less severe and allow a more in-depth research at the expense of a direct link to an upcoming political decision (Lendi 2005: 5, 10). The Swiss „national research programm“ NFP introduced in 1975 represents a specific form of commissioned research with high political relevance, because the research topics are directly chosen by the parliament (Bundesrat) (Lendi 2012). In this sense these research programs are more closely linked to politics than those of the German Ministry of research. Examples on research projects on spatial issues are NFP 05 "regional problems in Switzerland, namely in the mountain and border areas" (until 1984), NFP 54 "sustainable development of settlements and infrastructure" (until 2005) or NFP 65 "new urban qualities" (until 2015).

Official knowledge in corporatist countries

Knowledge infrastructures within direct reach of the government shall be scrutinized more in detail here as they are of particular relevance in countries with a corporatist policy style. Despite of general trends towards the privatization of tasks, the need for Government owned research capacities producing "official knowledge" is not contested in the three countries, but the degree of autonomy and the role of the sphere of science are subject of negotiation processes (boundary work). Government owned knowledge infrastructures as part of the administration or directly linked to it exist in all three countries. The direct access to knowledge is seen as precondition to fulfill knowledge intensive governmental tasks. This attitude is prevailing and a privatization of governmental knowledge production for the preparation of decision-making is not a dominant trend in the field of spatial planning. The coalition contract of the current German federal government (CDU, CSU, SPD 2013: 27) even declares a strengthening of departmental research agencies (Ressortforschung). In Switzerland the internal research capacities of the governmental administration responsible for spatial planning have even been raised in the last decades (Lendi 2005: 112), this particular development is however to some extent a catching up process due to the late attribution of competencies in spatial planning to the national level.

To dispose of own knowledge infrastructures has compared to the use of external consultants the advantage that expertise is available within a shorter time span and more tailored to the needs of the government concerning the content and presentation of it. This way of thinking is a manifestation of a

specific understanding of the state, particularly in Germany. The state owned generation - or at least selection – of expertise lends an “official character” to it and gives thereby a specific claim of validity to it. Another effect is that this official expertise is to a certain extent binding for politics and administration, because it cannot be easily discarded as being just one expert opinion, it needs instead to be declared as not sufficiently scientifically proven to be ignored (Weingart/ Lentsch 2008: 166; Barlösius 2008: 12, 14). This would however damage the credibility of the organization, which could in turn contribute less to the legitimization of government policy, meaning that a confrontational relationship is harmful for both sides (Jasanoff 1990: 231).

The way government owned knowledge infrastructures are organized and linked to the administration differ in the Netherlands, Germany, and Switzerland and have been subject to changes over time. Three variations (or types) are observable, differing according to the dependency of the Ministry in charge and the tasks (including sovereign tasks or not):

- Research units within the administration (CH):

The knowledge production is directly integrated in the national administrative agency responsible for spatial planning, guaranteeing a direct access and influence on decisions.

This has been the case in Germany until 2009 and the Netherlands until 2002 when the research unit was part of the National Spatial Planning Agency NSPA/ Rijksplanologische Dienst. Switzerland still uses this organizational model. The Federal Office for Spatial Development/ Bundesamt für Raumentwicklung ARE has been founded in 1980 under the name Federal Office for Spatial Planning/ Bundesamt für Raumplanung with the coming into force of the federal planning act (Raumplanungsgesetz RPG) and renamed in the year 2000, when it was merged with the Federal Agency for Transport Studies, Sustainable Development and the Alpine Convention. The knowledge generation within the ARE is organized in an independent unit (called “Sektion Grundlagen”). Another organizational solution would be to manage research within the various functional units of a department, as done by some Ministries in the Netherlands. The advantage of a centralized research department is easier quality control, whereas decentralized research allows for feeding the expertise more directly into the policy process.

- Research institute as part of the administration (D):

Compared to the first model this means more independency and visibility of the research unit, but it remains directly linked to the Ministry and has a double role, doing both research and fulfilling administrative tasks for the ministry.

Germany has a tradition of this kind of publicly financed research institutions that are directly linked to a Ministry and its field of competence (“Ressortforschung”) going back to the 19th century. This specific form of policy-relevant knowledge production is characterized by its closeness to policy needs concerning the addressed topics, the time of delivery and the applicability of the expertise (Weingart/ Lentsch 2008: 166). Today, over 30 research organizations exist as every ministry disposes over several research institutions of this kind, some with a quite narrow field of expertise. In spatial planning this part is met by the BBSR (Federal Institute for Research on Building, Urban Affairs and Spatial Development/ Bundesinstitut für Bau-, Stadt- und Raumforschung). The research departments have after a fusion in 1998 for eleven years been part of a federal office (BBR) being responsible for the buildings of the federal government in Bonn, Berlin and internationally. Only in 2009 the BBSR was established as a research institute within the federal office in order to improve the external perception as research institution. It provides expertise for the preparation and implementation of political decisions (on short notice if needed) combined with research with long-term orientation aimed to foresee future challenges (Göddecke-Stellmann 2011: III).

- Independent research institutes with agency status (NL):

This kind of research infrastructure is also linked to the government, but in contrast to the other two models it is only dealing with scientific tasks and provides for higher autonomy of research.

In the Netherlands, the so-called „Planbureaus“ play a key role for knowledge generation for the government (Halffman 2009). Similar to the German Ressortforschung, they are publicly funded and part of the government structure which defines their research program. Planbureaus do not depend on one single minister and only serve for research and policy advice. They have an unrivalled authority and high scientific reputation. Their expertise is accepted as a common ground for negotiations (Halffman 2009: 2, 14). Since 2008, there exist three Planbureaus: the Netherlands Bureau for Economic Policy Analysis (created in 1947), the Social and Cultural Planning Office (since 1973) and the Netherlands Environmental Assessment Agency (since 2004) (van der Wouden et al. 2006: 34). In the field of spatial planning the research unit formerly organized within the administration was transformed in 2001 into the Netherlands Institute for Spatial Research/ Ruimtelijk Planbureau and in 2008 merged with the Netherlands Environmental Assessment Agency, formerly only responsible for environmental policy.

The organization of knowledge production tends to follow country specific models independent from the policy field. The respective forms of Planbureau or Ressortforschung have a long tradition in the Netherlands and Germany, whereas it is common in Switzerland to organize knowledge generation within the federal offices. The most effective organizational form and the positioning of science-based political advice between the scientific community (academia) and the political sphere has been an issue in the last decade in Germany and in the Netherlands, producing changes in the organizational form and positioning of the governmental research units.

A second form of policy advice with a close link to politics, but fulfilling a totally different function shall be mentioned here: expert committees. Both in the Netherlands as well as in Germany and Switzerland permanent expert committees appointed by the government have a long tradition. They accompany the government with critical statements on current territorial challenges and policy options. However, differences can be observed as well. In the Netherlands, a recent downsizing of advisory bodies has taken place: four existing councils (Council for the Rural Area, Advisory Council for Transport, Public Works and Water Management, the Council for Housing, Spatial Planning and the Environment VROMraad and Hazardous Substances Council of the Netherlands) were merged in January 2012 into the RLI Council for the Environment and Infrastructure/ Raad voor de Leefomgeving en infrastructuur. With only nine members it is the smallest council compared to the other countries.

The with 27 members currently largest expert committee on Regional Development/ Rat für Raumentwicklung in Germany also includes stakeholder organizations sending their representatives (e.g. friends of the earth, confederation of Skilled Crafts, Forestry Council, Farmers' Association) and the other territorial levels (cities and municipalities, counties, Länder). In the previous legislature period (2009-2013) the committee even had 39 members including seven from the neighboring countries. That expert committees are not exclusively composed of scientists, like it is otherwise common in Germany (Weingart/ Lentsch 2008: 61) is a peculiarity in spatial planning in comparison to other policy fields. This composition can also be observed in the Swiss Council for Regional Planning/ Rat für Raumordnung established in 1997. Less than half of the 15 members come from universities and research institutes and there are also various think tanks and Canton planners represented. A concentration on fewer committees took place as well: from 1998-2000 there was an independent Council for Sustainable Development, whose functions were added to the Council of Regional Planning later on. Whereas the expert committees in Switzerland and Germany are linked to one ministry, having their office for the administrative support in the federal offices (ARE/ BBSR), the RLI in the Netherlands is supposed to advise the whole government, particularly the three Ministries of Infrastructure and the Environment (I&M), Economic Affairs (EZ) and the Interior and Kingdom Relations (BZK).

The three countries differ in the linking of the knowledge infrastructures to a department. Germany has a tradition of a strong departmental organization of policy and a direct connection of knowledge infrastructures to the ministry being responsible for the topic. Research funds are mostly managed by the sectoral ministries with the exception of basic research funds managed by the ministry of research. The Netherlands on the other hand rather link their knowledge infrastructures to the government as a whole and have a smaller number of organizations covering each a broader thematic field. Switzerland is somewhat in the middle, having a departmental attribution of federal agencies and expert committees, but more efforts in interdepartmental research cooperation.

The German BBSR between politics, science and society

The organizations at the boundary of science and other parts of society have to balance the sometimes contradictory logics and requirements of different social systems to be able to survive (Gulbrandsen 2011: 221). The orientation towards politics, science and society shall be analyzed in detail for the German Federal Institute for Research on Building, Urban Affairs and Spatial Development BBSR.

A strong, institutionalized link between the institute and the ministry can be stated. The ministry is the main addressee of the expertise, appoints the director and carries out the supervision of the institute, both in administrative and technical terms. The research agenda for the upcoming year is conceived in a mutual process, integrating propositions on research gaps coming both from the researchers of the institute and the units in the ministry and is agreed upon by the responsible state secretary. There is a clear focus on topics and research questions with an immediate link to the tasks and political priorities of the ministry, especially concerning the research that shall be commissioned externally. The relationship between ministry and institute is not reduced to unilateral control, but can rather be described as a close collaboration. Some units in the institute have daily contact with their counterpart in the ministry and fulfil closely related tasks, e.g. in the field of European Cooperation (management of INTERREG, ESPON etc.). Researchers from the BBSR are present in many political meetings and

committees, e.g. the preparation of the ministerial conference on spatial planning between Federal State and Länder MKRO and the Minister meets on a monthly base with the heads of her research agencies, meaning that the BBSR is close to the political discussions. Another mechanism to ensure that the researchers produce expertise that is readable and usable for the ministry is that the staff of the BBSR is encouraged to take over a short term assignment within the ministry to create a deeper understanding of processes and the way of thinking within the administration.

The embedding within the scientific community relies much on the personal motivation of the staff, as many forms of exchange and collaboration are welcome, but voluntary, not being mandatory tasks. This is true for the involvement in working groups of the academy for spatial research and planning ARL, university teaching assignments, the presentation of results on conferences and in peer reviewed journals as well as the acquisition of research funds. Many of the staff members have former work experience from a research institution and $\frac{1}{4}$ of the researchers in division I responsible for spatial planning and urbanism have a PhD, including almost all in leading positions, meaning that they have been socialized within the academic system. Doctorates during the employment at the BBSR are possible, but rare. The usual career path is from an academic institution to the institute and from the institute to a ministry, but not the other way round, with few exceptions. The recognition of the credibility is high within the professional circles, especially concerning the maps and data on spatial development that are extensively used both by practitioners and scientists. The research methods both for own research and projects to be carried out by a contractor (university, research institute or consultant) are fixed by the researchers of the BBSR. The main mechanism of quality control is the principle of dual control and regular meetings between the researchers to discuss about the research projects. The supervision of external contractors currently depends much on the responsible staff member at the BBSR and his/her way of working.

There is a high transparency concerning the contracted research during the whole process from the call to the final results. Information is available for anyone interested on the homepage and spread via newsletters. Almost all research reports are published within short delays by the institute, though the Ministry has as customer the right to decide. Rare cases exist where the ministry disagrees on a publication because of quality concerns or major disagreement on the conclusions, but the researchers are then usually free to publish their results themselves (Pahl-Weber 2011: 405f). The own research activities of the staff are a bit less transparent, as the research program of the institute is not public nor is information on ongoing activities, but the outcomes are published. In recent years there have also been reports on the overall research activity and profile of the institute (2012 and 2015). Furthermore a broad range of workshops and conferences organized by the institute foster a discussion process and diffusion of expertise among practitioners. The institute is well known within professional circles, but less so in the broader public. This stems from the fact that it is with about 150 employees a rather small institution and that questions of spatial development on a supra-local level do not receive high attention in the German media in general.

The strong orientation towards policy relevance is enrooted in the organizational form and somewhat the reason to be for the institute. It is not contested by the researchers themselves either, who see the close link to politics rather as an advantage, enabling them to anticipate research needs and assess feasibilities. They feel to a certain extent to be on eye height in the relation with the ministry and contributing to a common goal. This deep involvement could be seen as problematic in terms of independence of advice and for getting fresh, innovative ideas, but this part is met by the external contractors delivering large parts of the content. The BBSR mostly has an intermediary function knowing what politics need and translating it into concrete research questions and research designs. To be able to fulfill this function on a high scientific level, the researchers need to be in touch with the scientific community to know the state of the art and have a minimum of time for own research activities and training. The share of own research is one of the mayor points of discussion concerning the role of the institute and has come under increasing pressure within the last decades because the funds that have to be managed by the institute (either for research projects or recently also for investment projects in the municipalities) have tremendously grown from about 15-20 research projects per year in the 1970ies and 80ies (Kübler 2007: 365) to 334 contracts, respectively 25,7 Mio € in 2012 (BBSR 2013: 85). Supported by an overall debate in all policy fields about the positioning of departmental research institutions as a sector of research outside the universities that gets more attention and is also expected to contribute to academic knowledge instead of a rather unnoticed part of the ministerial administration (Weingart/ Lensch 2008: 186), the head of the institute tries to stabilize the share of own research and to give more room to it by fixing a quantitative aim as well as to highlight aspects of scientific quality control. One driver behind a more academic orientation is an evaluation by the scientific council/ Wissenschaftsrat first carried out in 2006 and will be repeated in 2016. Under the current director, the institute is also thriving to reach a higher visibility by means of public relations, especially for analyses carried out within the institute. To speak with an own voice as a subordinate agency is not necessarily gladly seen by politics, but the freedom to do so has become

bigger with the shift to the environmental ministry in 2013, because the topic of spatial development is less in the focus there and the role of the departmental research agencies is seen differently than in the traffic ministry.

Conclusion

The knowledge infrastructures in the three countries Germany, the Netherlands and Switzerland resemble each despite country-specific aspects in the existing organizational forms, expert cultures and development paths. A pluralization of the advisory systems takes place in particular by the increase of think tanks and private sector consultants. Despite this privatization and pluralization, knowledge infrastructures with direct reach of the state continue to have an important function in countries with a corporatist policy style, but how the role of public knowledge infrastructures is interpreted varies. The balancing act between policy relevance, scientific credibility and public awareness can be solved differently and must be ensured repeatedly through processes of boundary work due to diverging interests and system logics.

The Netherlands have in the last decade emphasized the scientific interdependency of their state owned knowledge resources in spatial planning, the downsizing and concentration of committees as well as the transfer and communication of results also towards the broader public via newly founded structures. Germany favors a larger number of knowledge resources directly allocated to a ministry with a strong link to policy, but discusses their role in the knowledge landscape as well. Think tanks focusing on a specific topic like demographic change have emerged, but are less diverse than in the other countries, along with a low politization and public awareness for spatial development issues on a supra-local level. Policy advice in the field of spatial planning in Switzerland can be described by a larger media presence and public discussion of issues related to spatial development partially supported by think tanks, a combination of sovereign planning tasks and knowledge generation within the own federal office and a preference towards larger research programs instead of highly pre-structured studies when it comes to contracted research.

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